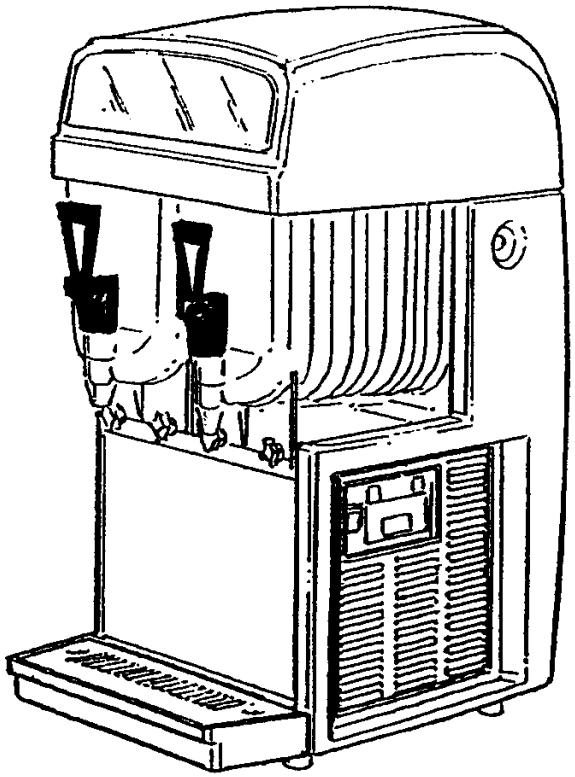
ICE FROST

Post-Mix and Pre-Mix

Installation, Service, and Operator's Manual



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ICE FROST POST-MIX AND PRE-MIX INSTALLATION, SERVICE, AND OPERATOR'S MANUAL

The products, technical information, and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic, and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

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IMPORTANT WARNINGS AND ADVICE

This instruction manual represents an integral part of the equipment and must be kept readily available for use.

Read the warnings contained herein carefully before installing and using this equipment.

In addition to offering information concerning routine maintenance for the ice slush drinks machine and technical back-up for troubleshooting, this manual aims to help the user make the most of the machine's potential, adapting it to suit the specific needs of the various countries it will be used in.

Modifications or attempts to modify the equipment will not only result in the forfeiture of the guarantee, but are also extremely dangerous.

The maintenance operations must be carried out by qualified professionals. Never attempt to repair the machine yourselves as the intervention of non-qualified persons, as well as being hazardous, could also lead to serious damage to the machine.

TECHNICAL DATA

PLATE DATA

The voltage and the frequency are indicated on the serial number plate, located on the refrigeration deck and the right hand side near the controls.

TRANSPORTATION INDICATIONS

To prevent the oil contained in the compressor from flowing out into the cooling circuit, the equipment must be transported, stored, and handled in a vertical position, as per the indications given on the packing.

The wooden pallet, equipped with housing for the lifting forks, allows the packed equipment to be moved using normal handling and hoisting means.

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INSTALLATION

1. Release the equipment from the packing, then slide it off upwards (see Figure 1).
2. Checking the machine identification after removing the packing, you must check that the equipment you have received is exactly as you ordered, making sure the specifications indicated on the invoice or the delivery note are identical to those on the data plate.

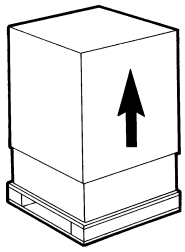

FIGURE 1

3. Equipment accessories
   The following accessories are included inside the bowls:
   - This instruction manual;
   - 1 tube of Vaseline to be used for the maintenance machine the requires;
   - A drip tray.

The back-lit cover is packed separately from the machine.

4. Positioning - make sure the machine's bodywork is well ventilated, at least 6", and do not install near heat sources.
   We recommend you keep the room temperature at between 59 and 77°F.

IMPORTANT: All the pieces of packing must be kept out of reach of children as they represent potential hazards.

5. Remove gear motor shipping pins and tags from the rear of the unit prior to installation.

CONNECTING THE ELECTRICITY MAINS

Before inserting the plug into the mains socket for your own safety you must take careful note of the following precautions.

- The machine's electrical system can only be considered safe when it is connected correctly to a grounded outlet, as provided for by the national safety regulations. The manufacturer cannot be held responsible for any damages that may be caused by failure to earth the system.
- For the system to be installed correctly and safely, it is essential to provide a suitable socket having a dedicated 20 Amp circuit which complies with the national safety standards in force (see Figure 2).
- Check the power supply cable to make sure it is not being crushed, do not use extension cords and, to remove the plug, first turn OFF the switch, then hold the plug tightly and pull gently.

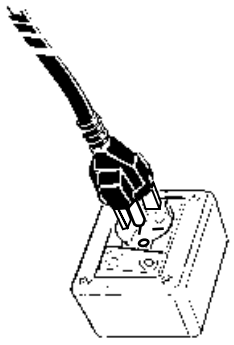

FIGURE 2

- Do not obstruct the ventilation and the heat dissipation grids as bad airing, in addition to reducing the output and causing bad functioning, could also lead to serious damage to the equipment.

IMPORTANT: If the power supply cord is damaged, it must be replaced by qualified persons only to prevent any possible risks.

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CONNECTION DIAGRAMS

Ice Frost Generic (Pre-mix)

The diagram shows the sequence for the connection between the ICE FROST GENERIC PRE to an existing pre-mix system.

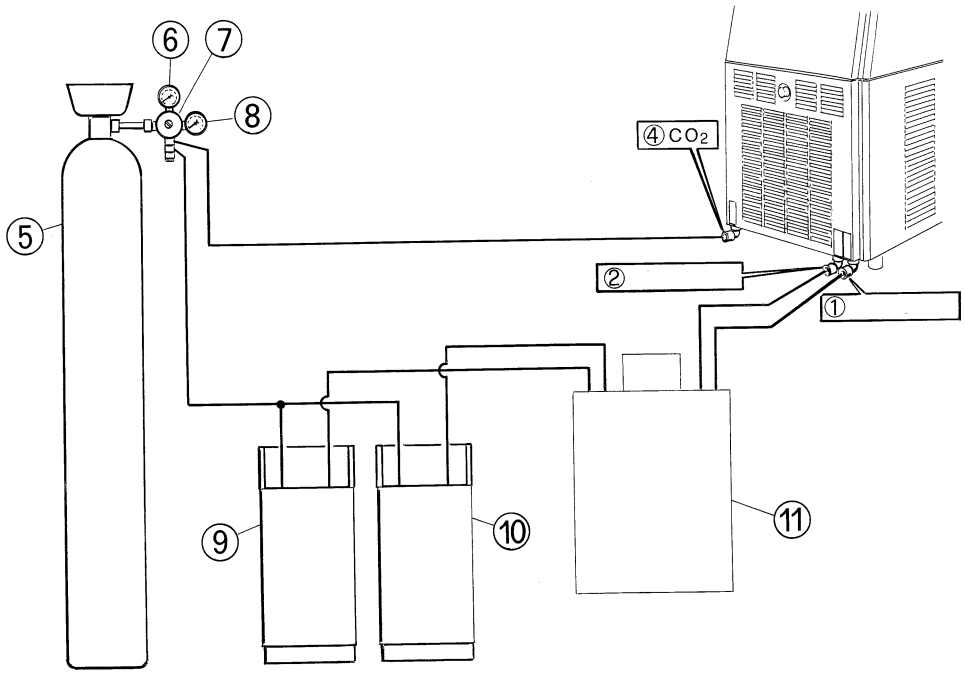

FIGURE 3

Description:

1. Pre-mix product 1 inlet.
2. Pre-mix product 2 inlet.
4. Inlet for CO_2 (coming from the pressure reducing valve, 12 psi).
5. CO_2 gas cylinder.
6. Operating pressure gauge.
7. CO_2 pressure regulator.
8. Gas cylinder pressure gauge.
9. Pre-mix product 1 container.
10. Pre-mix product 2 container.
11. Cooling unit (Optional).

Connection:

Connect the points 1, 2, and 4 on the machine to the existing pre-mix system using quick couplings.

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Ice Frost Generic (Post-mix)

The diagram shows the sequence for the connection between the ICE FROST GENERIC POST to an existing post-mix system.

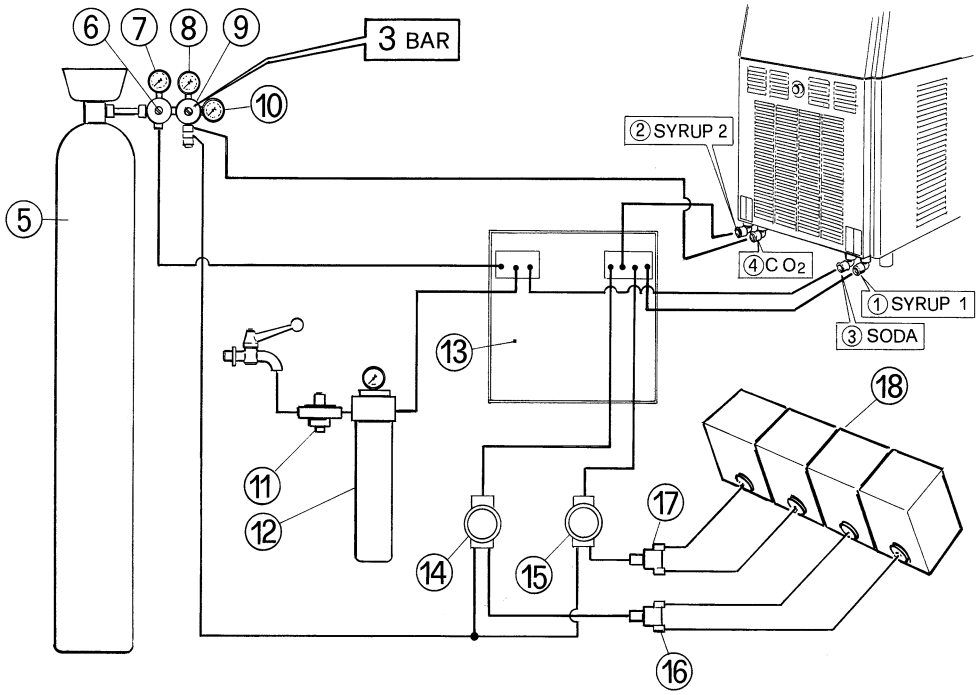

FIGURE 4

Description:

1. Syrup 1 inlet.
2. Syrup 2 inlet.
3. Soda water inlet.
4. Inlet for CO_2 45 to 60 psi.
5. CO_2 gas cylinder.
6. Operating pressure regulator for carbonation unit.
7. Carbonation unit operating pressure gauge.
8. Unit and BIB operating pressure gauges.
9. Pressure regulator.
10. Gas cylinder operating pressure gauge.
11. Water Pressure regulator.
12. Filter.
13. Carbonation unit and optional precooling unit.
14. Syrup 1 pump.
15. Syrup 2 pump.
16. Bag-in-box exchanger.
17. Bag-in-box exchanger.
18. Bag-in-box.

Connection:

Connect the points 1, 2, 3, and 4 on the machine to the existing post-mix system using quick couplings or .265 splice connectors.

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BOWL LOADING OPERATIONS

Alarms

NOTE: See Acronym Definitions on page 17.

Safety Probe Alarms (only for ICE FROST GENERIC Pre-mix)

You will remember that the monitoring of the safety probes' conditions (covered/uncovered) **is only active during the bowl loading phase**. It follows, then, that a lack of liquid in the tanks during the non-loading phases will not be signalled.

When one of the two safety probes (SSIC1 and SSIC2) fails to detect the passage (presence) of liquid during the loading phase, the system will stop (3-second software filter) the loading phase in progress, while the buzzer on the machine emits an intermittent warning signal lasting 6 seconds.

The EVCARx connected to the unit where the lack of liquid has been detected by the SSICx can only be energized by switching the system OFF then ON again. The functions linked to the EVPRESS will not undergo any changes.

If both the safety probes (SSIC1 and SSIC 2) fail to detect a presence of liquid while the bowls are loading, the buzzer on the card will emit an intermittent sound lasting approximately 20 seconds.

The actuators EVCAR 1 and EVCAR 2 are inhibited (OFF). The normal operation conditions can be restored by switching the machine OFF then ON again using the main switch.

The EVPRESS solenoid valve is independent of the alarm signal and continues its CO_2 gas pressure reading function only (see relevant paragraph).

1st Filling Time-out

A time limit has been set for the first filling phase which is linked to the level probes SLIV 1 and SLIV 2's detection of the presence of liquid.

When one of the two probes (SLIV 1 and SLIV 2) fails to detect the presence of liquid for more than four seconds, the buzzer on the card will emit an intermittent sound for approximately 6 seconds.

The EVCARx connected to the unit where the lack of liquid has been detected by the SSICx can only be energized by switching the system OFF then ON again.

When both the level probes (SLIV1 and SLIV 2) fail to detect a presence of liquid for more than four seconds, the buzzer on the card emits an intermittent sound lasting approximately 20 seconds.

All the actuators linked to the system are inhibited (EVCAR 1, EVCAR2, and EVPRESS =OFF). The normal operating conditions can be resumed by switching the system OFF and then ON again.

Filling Time-out

A time limit has been set for the normal filling phase which is linked to the level probes SLIV 1 and SLIV 2's detection of the presence of liquid.

When one of the two probes (SLIV 1 and SLIV 2) fails to detect the presence of liquid for more than one minute, the buzzer on the card will emit an intermittent sound for approximately 6 seconds.

The EVCARx connected to the unit where the lack of liquid has been detected by the SSICx can only be energized by switching the system OFF then ONN again.

When both the level probes (SLIV1 and SLIV 2) fail to detect a presence of liquid for more than on minute, the buzzer on the card emits an intermittent sound lasting approximately 20 seconds.

The EVCAR 1 and EVCAR2 actuators are inhibited (OFF). The normal operating conditions can be resumed by switching the system OFF and then ON again.

The EVPRESS solenoid valve is independent of the alarm signal and continues its CO_2 gas pressure reading function only (see relevant paragraph).

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"FILTER CLEANING" Alarm

A filter cleaning alarm will activate when the unit is running hot due to insufficient internal air circulation. When this occurs a "Filtr" message will appear on the touch pad LED display readout and an intermittent audible tone will also sound to alert the operator of this condition.

The "Filtr" message will appear when the alarm activates (a beeping sound every 4-5 seconds). To determine the condition that caused the alarm and correct problem, see list of conditions below:

Condition	Corrective Action
• The filter is dirty and needs to be cleaned.	• Clean and replace filter following instructions (Removing and Cleaning Filter).
• The unit is positioned too close to a wall or other object restricting air flow and causing the machine to run at a higher temperature.	• Reposition unit to maximize ventilation space (Installation Instructions).
• The filter is not properly installed.	• Properly install filter (Removing and cleaning filter).
• The unit has been installed near a heat source, such as a coffee machine, ice maker or cold beverage machine which expels hot air from its vents, causing the machine to run at a high temperature (installation near a heat source should be avoided).	• Reposition unit to maximize ventilation space.

"SYSTEM OVER TEMPERATURE" Alarm

A system over temperature alarm will activate as a safety precaution when the unit has overheated to protect the compressor.

- The system automatically goes to "OFF" status where the compressor's operations is stopped, while augers will keep working to avoid forming ice blocks.
- When this occurs an "Err" message will appear on the touch pad LED readout accompanied by a continuous buzzer sound to alert the operator of this condition.
- When this alarm activates, turn OFF all switches. Then determine the condition. (See "Filter Cleaning" Alarm Section for Conditions and Corrective Actions).

ICE FROST GENERIC (PRE-MIX)

WARRNING: If the unit runs out of product, is turned off and turned back on without a new (full) product tank installed the sensor will look for product for 4 minutes. During this 4 minute period CO_2 will be pumped into the air.

- Switch the machine's main switch to the ON position (1).
- Put the switch (A) into the ON position (1) see Figure 5, switch A. Controls the flow of the product in the bowls.
- The machine's bowls will now fill up until the maximum level is reached.
- Continue with start up operations.

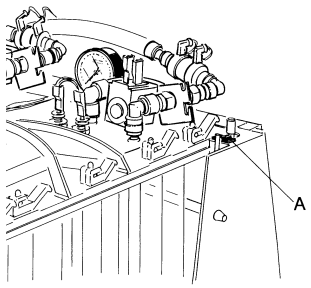

FIGURE 5

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ICE FROST GENERIC (POST-MIX)

- Switch the machine's main switch to the ON position (1).
- Make sure the switch (L1) is in the OFF position (0) - Figure 6 - (switch L1 controls the flow of the products in the bowls).
- Turn mixing motors OFF immediately. Do not run units with bowls empty.
- Using an 8 mm socket wrench (E1), loosen the nut that holds the post-mix valve (D1).
- Twist nozzle counter-clockwise (F1), lift the post-mix valve (D1) up slightly and turn it towards the outside. leaving nozzle and coupling attached to the bowl.

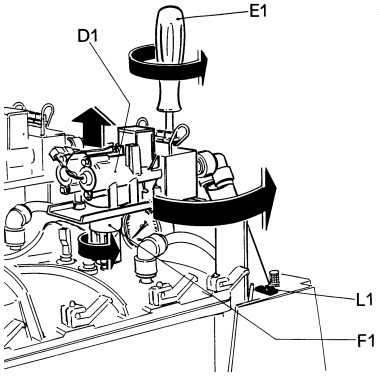

FIGURE 6

Brix and Ratio Procedure

- Now pull the post-mix valve out further and tighten the 8mm nut using the socket wrench (E1) - Figure 7.

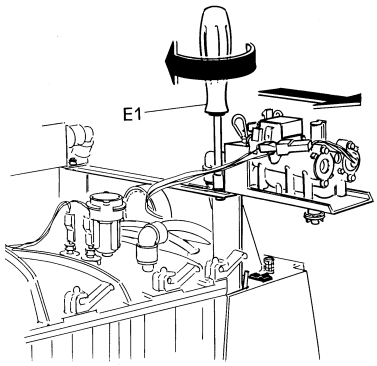

FIGURE 7

- Remove the post-mix valve's nozzle and apply the relevant dose calibrator/separator (G1), then the relative measuring cup (H1) and push the micro switch on the valve (I1) until both the soda water and the syrup run into the measuring cup separately (Figure 8).
- Check the BRIX: turn the water adjustment screw on the solenoid valve clockwise to increase or counter-clockwise to decrease the amount of water in the product.
- When the desired mix has been found, remove the parts G1 and H1, replace the spout on the post-mix solenoid valve, then position it in its original seating, performing the previous operations in reverse order.
- A refractometer may be used as an alternative to ratio measurement.

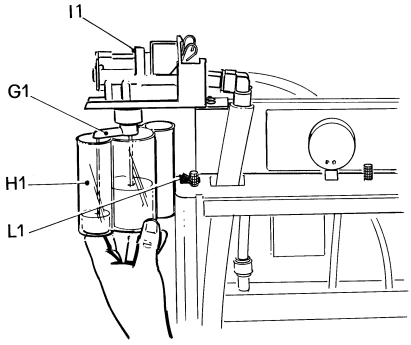

FIGURE 8

- Repeat the same operations for the second bowl.
- Once the adjustments have been carried out for each bowl, place the switch (L1) in the ON position (1).
- Both bowls will begin to fill up when the level sensor is activated.
- Turn mixing motors ON (located on the control board).
- Unit has built in delays for compressor and bowl fill switch.
- During initial filling it is normal for some foaming to take place. Bowl level management will adjust as it freezes down and foam will dissipate.

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PROGRAMMING ELECTRONIC TOUCH PAD

To lower the control cover, use a coin or other object to turn the keyless lock to the horizontal position, in order to access the operating panel (controls are located on the right side of the unit).

Main Power Switch

- Turns unit ON.
- Selects 12/24 time or F°/C° temperature display when turned ON while simultaneously depressing the auger button.
- Sets current time when turned ON while simultaneously depressing the "PRESS TO SELECT FUNCTION" button.

Auger ON/OFF Button

- Turns auger ON and OFF when main power switch is ON.
- Must be ON to permit COLD time to be reset.
- Must be ON to activate the "PRESS TO SELECT FUNCTION" button to select manual "OFF", "FREEZE", or "COLD" functions.

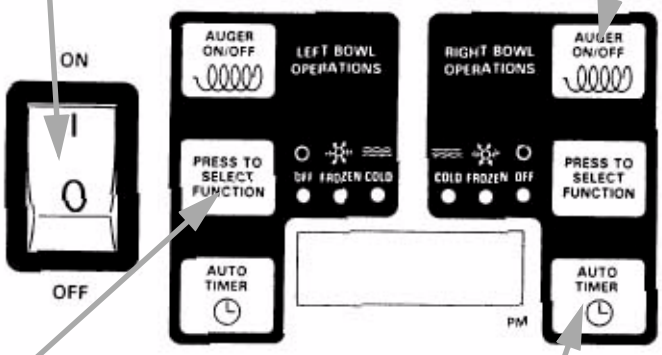

FIGURE 9

PRESS TO SELECT FUNCTION Button

- Used to manually select "OFF", FREEZE", or "COLD" functions when auger is turned ON.
- Accesses COLD timer reset mode when depressed for an extended period when auger is turned ON.
- Locks in hours, minutes and final time settings after they are reset using the "AUTO TIMER" button.
- Does not function when light on "AUTO TIMER" button is illuminated.

"AUTO TIMER" Button

- Turns auto COLD mode ON or OFF (light on switch indicates when auto COLD mode is activated).
- Used to adjust the hours and minutes settings when readjusting current time or auto COLD timer.

Enter Time Programming on Initial Installation or in the Event of a Time Change

1. Turn the power switch OFF.
2. Press and hold the left "PRESS TO SELECT FUNCTION" button and turn ON the power switch. Release the "PRESS TO SELECT FUNCTION" button when the hour digits start blinking.
3. Set the hour by pressing the "AUTO TIMER" clock button until the appropriate hour is shown.

NOTE: When using a 12 hour clock the time is P.M. when the dot at the bottom right corner of the LED display is lit; A.M. when dot is not lit.

4. Press the left "PRESS TO SELECT FUNCTION" button to set the minutes, then press the "AUTO TIMER" clock button until the appropriate minutes are set.
5. Press the "PRESS TO SELECT FUNCTION" button one more time to save your settings.

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Setting COLD Timer (Night Setting)

1. Turn the power switch ON. Make sure the "AUTO TIMER" is OFF (light on button is not lit).
2. Press the left hand "Auger ON/OFF" button ON.
3. Press and hold the "PRESS TO SELECT FUNCTION" button until you hear a long beep and the LED, "Cold" and the "AUTO TIMER" clock light begins to blink.
4. Press the "AUTO TIMER" clock button to set the unit to COLD mode and then press the "PRESS TO SELECT FUNCTION" button to save the setting.
5. Press the "AUTO TIMER" clock button to set the minutes to complete time setting that you want it to turn to COLD mode. Then press the "PRESS TO SELECT FUNCTION" button to save the minute setting. The "COLD" light will turn off and the "FROZEN" light and "AUTO TIMER" light will begin blinking.
6. Set the time you want the machine to return to FROZEN mode by following steps 1 - 5 above. Then press the "PRESS TO SELECT FUNCTION" button to save the time settings. The FROZEN light should be blinking.
7. Repeat steps 1 - 6 for the opposite bowl using the left buttons.

NOTE: Once the settings have been saved, the unit will keep the settings, even when the power switch is turned OFF.

NOTE: When the light on the "AUTO TIMER" clock button is "ON", the COLD timer is activated. To turn OFF the COLD timer, press the "AUTO TIMER" clock button(s) until the light(s) on the clock button(s) turns off.

Operate in Automatic Mode (with COLD Timer Activated)

1. Turn power switch ON and wait for LED display to light up.
2. Press the left hand "Auger ON/OFF" button ON.
3. To operate in COLD mode press the "AUTO TIMER" button until it is illuminated.
4. When setting automatic times, please keep in mind it will take time for the frozen product to become liquid or vice versa.

Operate in Manual Mode (without COLD Timer Activated)

1. Turn the power switch ON and wait for LED display to light up.
2. Make sure the clock button is OFF (LED light on clock button should not be lit up).
3. First turn auger ON by pressing the "Auger ON/OFF" button until it beeps.

NOTE: The auger must be ON before the unit will allow the COLD or FROZEN mode to be activated.

4. Then select COLD or FROZEN mode by pressing the "PRESS TO SELECT FUNCTION" button until the light under the selection you desire is lit up.

NOTE: In the COLD mode, the LED will read the actual temperature of the product (the temperature setting is preset to NSF standards and is not adjustable.) In the "FROZEN" or "OFF" mode the LED will read the current time.

Setting the 12 or 24 Hour Display and ^{o}F or ^{o}C Temperature Display

1. Turn the power switch OFF.
2. Press and hold the left "AUGER ON/OFF" button and turn ON the power switch. Release the "AUGER ON/OFF" button when either "12" or "24" are shown (indicates the current hour view).
3. Press the "PRESS TO SELECT FUNCTION" button until either ^{o}F or ^{o}C is shown on the display.
4. Press the "AUTO TIMER" button until the desired temperature display type is shown (^{o}F or ^{o}C).
5. Store the change by pressing the "PRESS TO SELECT FUNCTION" button until the current time is displayed. The unit is now ready for use.

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Viewing the Bowl Temperature

1. Turn ON the auger on the side that you want to display the bowl temperature (press the "AGER ON/ OFF" button).
2. Press the "PRESS TO SELECT FUNCTION" button until the "Cold" LED is lit. The display will now show the current bowl temperature in either ^{O}F or ^{O}C depending on which was selected.

CONSISTENCY ADJUSTMENT

1. To dispense the product, place the cup beneath the tap (Q) and lower the lever (R) very gently (Figure10).
2. Adjusting the consistency:
   To vary the consistency of the ice slush, turn the knob (S) as shown in Figure 11.

Turning the knob counter-clockwise will increase viscosity (make the product denser).

Turning the knob clockwise will decrease viscosity (make the product less dense).

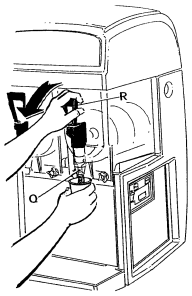

FIGURE 10

ATTENTION: This device only changes the consistency of the ice slush dispensed, it does not effect the COLD temperature.

ATTENTION: When the level of the ice slush inside the bowl is below the minimum, to stop the product becoming too dense, you must switch off the COLD system (OFF position), or top up the bowl, following the instructions given in the previous paragraphs.

An indicator gauge for reference is located on the back of the unit approximately 6 inches below the adjustment knob.

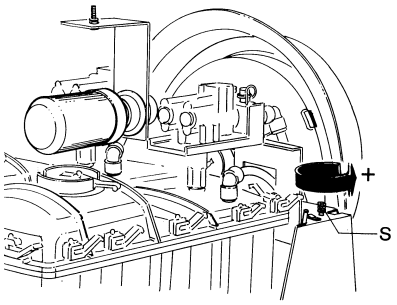

FIGURE 11

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QUARTERLY CLEANING AND SANITATION

OPERATIONS

ATTENTION: The cleaning operations must be performed with the machine disconnected from the power supply.

1. Empty the bowl of any remaining product and switch off the main switch "M".
2. Remove the cover (B) - Figure 27.
   With the post-mix version, see Figure 6 and 7 for details.
3. Extract the quick couplings (C2) / (F2) - (Figure 12, 13, and 14).

Pre-mix version

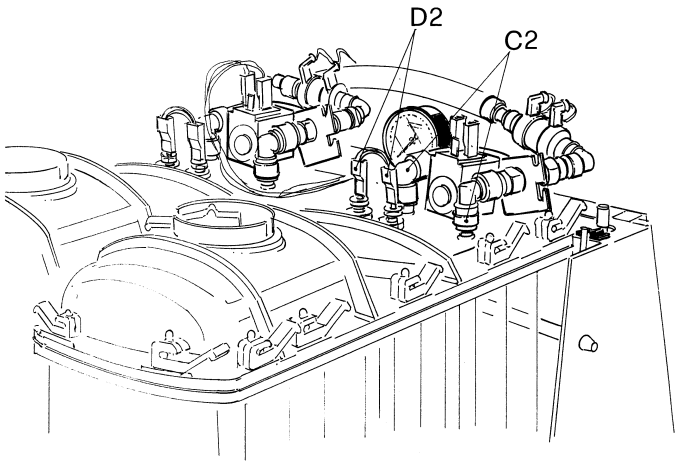

FIGURE 12

Post-mix version

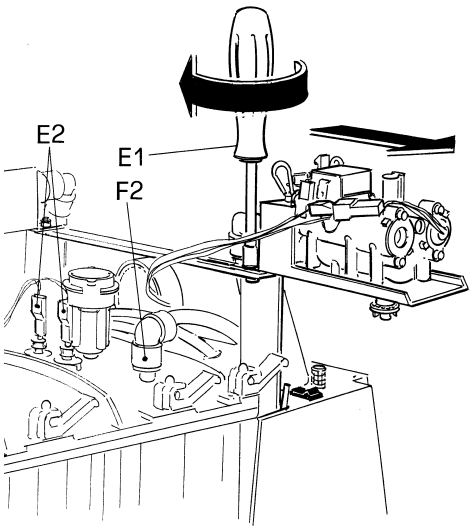

FIGURE 13

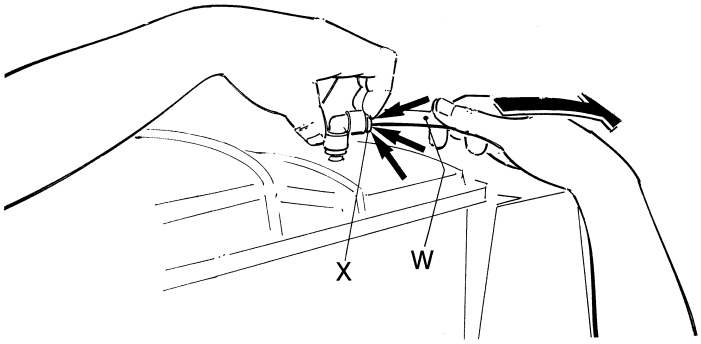

FIGURE 14

4. Disconnect the probe fastenings (D2) / (E2) - (Figure 12 and 13).
5. Pull the lockpin/safety pin (Y) upwards - Figure15.

CAUTION: There is a spring below the safety pin. Take caution when removing the pin that the spring does not fall into the unit or eject the pin.

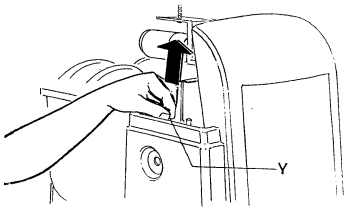

FIGURE 15

6. Slide the locking bar (Z) - Figure 16 - outwards so that the bowls are fully released.
   Unlock relief valve on the bowl lid cap and remove (Figure 17).

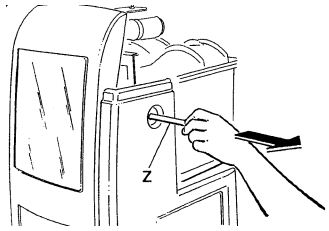

FIGURE 16

7. Unscrew the knobs (A1) so the bowls can be lowered slightly, open the tap to remove any remaining liquids and then extract it from its seating, pulling it outwards (Figure 17).

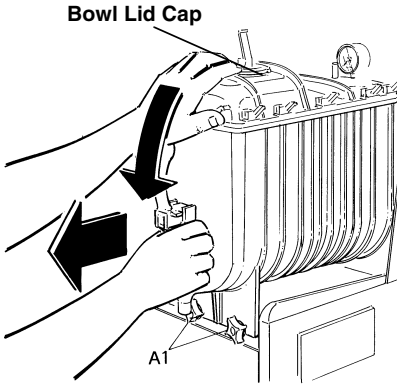

FIGURE 17

8. Remove the tap from its seating, pressing the two clamping wings at the same time (Figure 18) and pushing upwards.

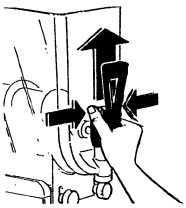

FIGURE 18

9. Remove the tap, holding the body (R) pressed downwards, then slide the lever (L) out of its seating (Figure 19). Wash all the parts thoroughly with hot water and mild detergent, rinse them well, and replace them.

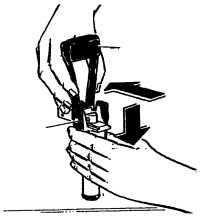

FIGURE 19

10. Separate the bowl from its cover, releasing the fastening (D1) by pulling them upwards as shown in Figure 20.

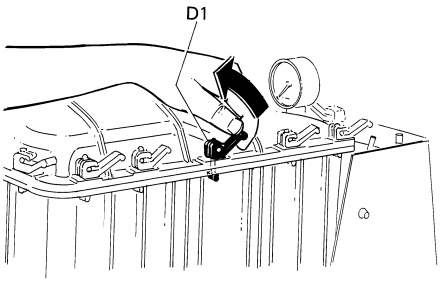

FIGURE 20

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11. Wash the bowl and cover carefully with water and mild detergent, rinse them well, and replace them, making sure the sealing strip (E1) is positioned correctly between the cover and the bowl. To guarantee the seal, the rounded part of the said sealing strip (as shown in Figure 21) must be facing the cover.

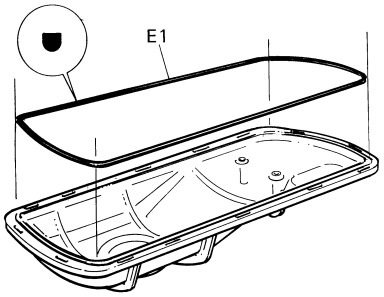

FIGURE 21

12. Unscrew the fastening knob (F1) clockwise as the direction indicated by the arrow (threading to the left) and extract the spiral scraper (G1) and the seals (H1) and (I1). Clean the individual parts thoroughly (Figure 22).

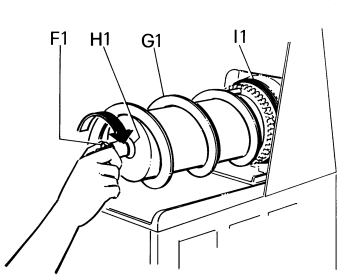

FIGURE 22

13. Clean the drip tray (J1) and the evaporator (K1) (Figure 23).
14. Replace the mixing unit as follows:
    - Dampen the sealing strip (I1) and insert it into its seating.
    - Apply a generous amount of Vaseline (supplied with the machine) to the suction cup seal (H1) (on the part that comes into contact with the evaporator K1) and insert it in its spiral seating.
    - Replace the spiral scraper (G1).
    - Fasten all the components in place by screwing the knob F1 counter-clockwise.
15. Replace the bowl by pushing it into its seating.
16. Fasten the bowl in place by tightening the knobs (A1) - Figure 24 and the locking bar (Z) - Figure 16.

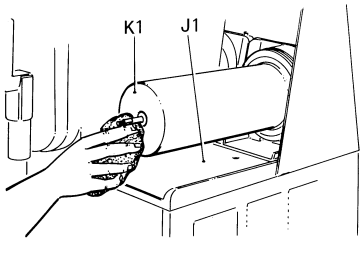

FIGURE 23

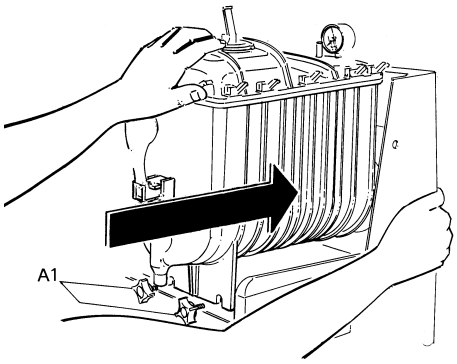

FIGURE 24

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17. Replace the tap, remembering to smear both is seating in the bowl and the seals (J) with Vaseline (Figure 25).

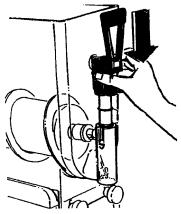

FIGURE 25

18. Remove the drip tray (L1) by rotating it slightly and pulling it outwards (Figure 26).
Wash all the parts carefully and reassemble it by following the prior operations, remembering to re-insert the condensation discharge pipe (M1) in its seating.

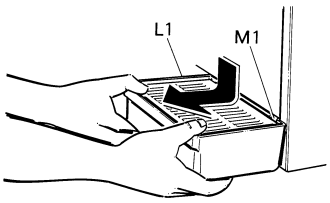

FIGURE 26

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SPECIAL MAINTENANCE

ATTENTION: To guarantee the cooling system a good performance level, the routine cleaning of the condenser filter is essential.

As explained earlier, an audible signal accompanied by the word FILT appearing on the control panel display, will warn the operator when the filter is clogged and so must be cleaned before the machine comes to an automatic stop.

- Disconnect the machine from the power supply;
- Unscrew the nut (C in Figure 27).
- Remove the cover (B in Figure 27).
- Disconnect the plug (D in Figure 28).
- Loosen and rotate the bracket.
- Lift and remove the back (E in Figure 28).
- Clean the filter behind the net, then clean the condenser with a brush, if necessary.

WARRNING: You are reminded that all the operations described above must be carried out with the machine switched off and the power cable disconnected.

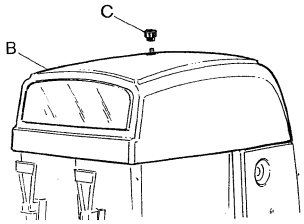

FIGURE 27

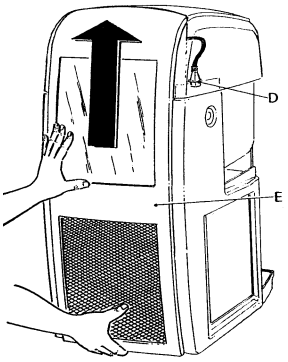

FIGURE 28

INSUFFICIENT AIR FLOW ALARM

To protect the entire cooling system, the ice slush drinks maker is fitted with an electronic system which issues an acoustic warning signal in the event of insufficient ventilation or if the condenser filter is clogged with dust. In addition to this, the words **FILT** and then **ERR** will appear on the control panel display.

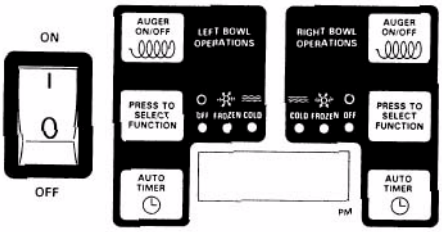

FIGURE 29

If the operator does not intervene when the signal is issued, restoring normal working conditions (i.e. ensuring better ventilation or cleaning the filter), this electronic system will stop the machine automatically.

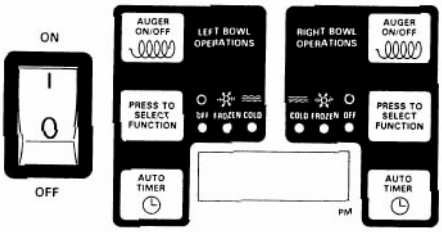

FIGURE 30

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ELECTRONIC MONITORING

ELECTRONIC MONITORING AND SAFETY SYSTEM

The diagram shows the electronic pressures and levels management system:

1. Safety valve.
2. Monitoring card for maximum limit exceeded probes.
3. Bowl 1 overpressure discharge relief valve solenoids.
4. Bowl 2 overpressure discharge relief valve solenoids.
5. CO_2 inlet solenoid valve.
6. Pressure and levels monitoring card.
7. CO_2 pressure switch.

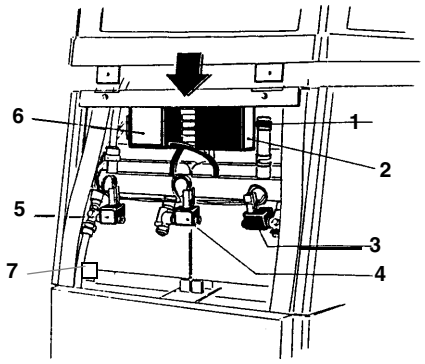

FIGURE 31

In addition to the product level probes, each bowl is fitted with 2 further 'overfull' safety probes.

In fact, if the level probes should cease functioning and so the product begins to fill up the bowls, these safety probes will transmit this information electronically to the monitoring card (2), which will then disconnect the pressures and levels monitoring card (6).

The pressures and levels control cards have various functions, which are described below.

PRESSURE AND LEVEL CONTROL CARD GENERAL FEATURES

Via a micro-controller, the μZ4LP allows the operator to manage the levels and the relative safety devices linked to the two cold drink bowls. An electronic pressure switch card (amplified, linearized, and compensated) is provided for monitoring the pressure of the gas used in the post-mix phase of the said drink.

The Electronic Pressure Switch Card will have the following features:

- Independent level control for each bowl.
- CO_2 gas pressure reading.
- Acoustic warning signal in the event of a lack of liquid/s.
- Pressure maintained between two pre-set points by means of a relay.

The use of these mixed THT and SMD components makes it possible to maximize the services/ dimensions/quality relationship (better immunity to external troubles).
The ECU is composed of two main printed circuits:

- Power' section including transformer, relay, and power supply.
- Logic' section including (controller and level control circuiting).

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ACRONYM DEFINITIONS

Legend

	Fan motor Transformer General switch
C	Compressor
CS	Starting capacitor
R	Starting compressor relay
PT	Overload protector
MR	Gear motor
VN	Fan motor
INT.	Control levels switch Light cover switch (rev. 00)
START	Ignition light cover neon Light cover neon Light cover neon reactor
CSL	Bowls level safety control
CLP	Bowls level and pressure control
CCM	Compressors and gear motors control
PRESS.	2,5 bar air pressure switch
E.V. PRESS.	Bowls pressure electrovalve Ø 1
E.V. SCAR.	Charging overpressure discharge electrovalve Ø 3
E.V. DOS. electrovalve	Product charging electrovalve for Pre-mix or syrup and soda proportioning
M.DEV.	Post-mix proportioning valve microdeviator
SO	Product control (coke)
I	Lights 0-1 switch arrangement (rev. 01)

Inputs Card

1.	SLIV1	Bowl 1 level probe input
2.	SLIV2	Bowl 2 level probe input
3.	SSIC1	Bowl 1 safety probe input
4.	SSIC2	Bowl 2 safety probe input
5.	SPRESS	Pressure sensor input

Outputs Card

1.	EVCAR 1	Bowl 1 filling solenoid valve
2.	EVCAR 2	Bowl 2 filling solenoid valve
3.	EVPRESS	CO_2 gas enabling solenoid valve

OPERATING CONDITIONS

The μZ4LP system has 4 main functioning conditions:

- OFF condition.
- 1st FILLING condition.
- BOWL LEVEL MANAGEMENT condition.
- CO_2 GAS PRESSURE management.

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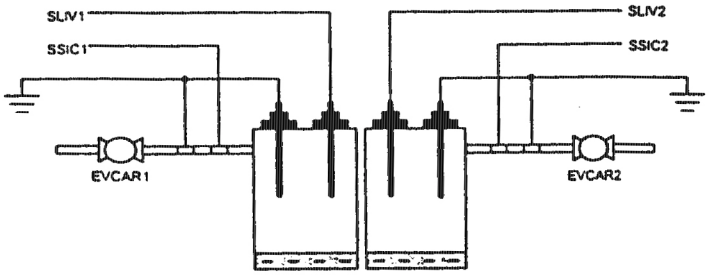
OFF Condition

In this condition, the electronic card is not connected to the power supply. To connect the ECU to the power supply, the main system switch must be put in the ON position.

1st Filling Condition

Supposing both the bowls are empty when the power is switched ON, the following situation will occur: After a 3 second delay if the four probes, managed by the system, have detected no 'presence' of liquid, the (µcontroller will energies the EVCAR 1 AND EVCAR 2 actuator to allow the correct level refill phase to begin.

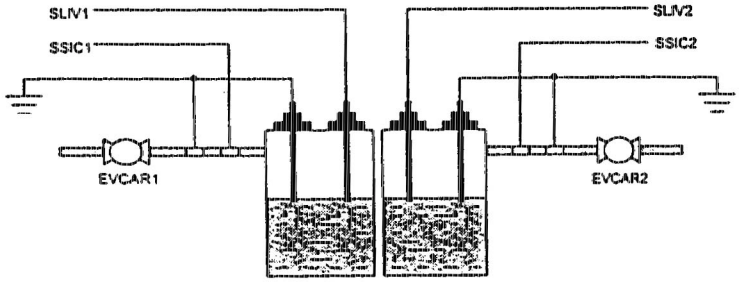


SSIC1 SLIV1 "KO" ⊃ EVCAR1 = ON
SSIC2 SLIV2 "KO" ⊃ EVCAR2 = ON

FIGURE 32

Following the system flow, the first probes to be 'covered' are the two SSIC1 and SSIC2. However, this recognition of the passage of liquid does not actually stop the filling phase since the main 'aim' of the ECU is to fill the two bowls to the level required. Therefore only the recognition by SLIV 1 and SLIV 2 interrupts the inlet of liquid into the bowl/s.

SSIC1 "OK" SLIV1 "KO" ⊃ EVCAR1 = ON
SSIC2 "OK" SLIV2 "KO" ⊃ EVCAR2 = ON



SSIC1 "OK" SLIV1 "OK" ⊃ EVCAR1 = OFF
SSIC2 "OK" SLIV2 "OK" ⊃ EVCAR2 = OFF

FIGURE 33

Once the 1st filling phase is complete, if necessary (see chapter on pressure levels management) the (µcontroller will enable the EVPRESS, which has been kept forcibly de-energized.

NOTE 1: The 1st loading phase must take place within a maximum time lapse which is controlled by the (controller (see Alarms section).

NOTE 2: The 1st loading phase may only concern one of the two bowls, but it will maintain the same features.

NOTE 3: If all the probes are covered when the system is switched ON, the EVPRESS functioning is enabled.

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Managing the Bowl Levels

When one of the two level probes (SLIVx) fails to detect the presence of liquid in the bowl, the EVCARx is enabled to restore the correct level.

The probes relating to each bowl are completely independent, therefore the following situation will occur:

SLIV1 "KO" ➲ EVCAR1 = ON
SLIV2 "KO" ➲ EVCAR2 = ON

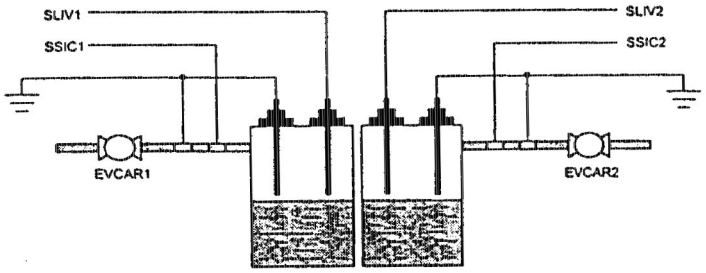

FIGURE 34

SLIV1 "OK" ➲ EVCAR1 = OFF
SLIV2 "OK" ➲ EVCAR2 = OFF

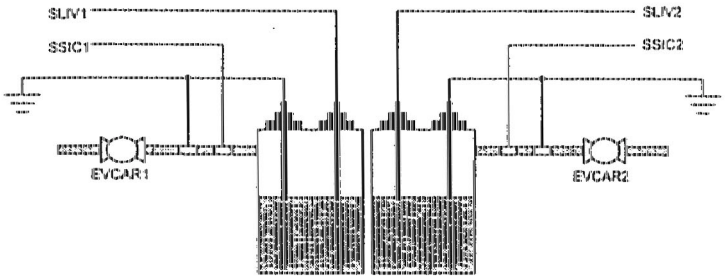

FIGURE 35

NOTE 1: The level/s refill phase must take place within a maximum time lapse which is controlled by the (controller (see Alarms chapter).

NOTE 2: The level/s refill phase may only concern one of the two bowls, but it will maintain the same features.

NOTE 3: It is essential that the safety probes are covered for the bowl/s filling phase to take place.

Safety Probes (only for ICE FROST GENERIC Pre-mix)

In addition to the two level probes relating to the two bowls (see FIGURE 32 through FIGURE 35), the μZ4LP system also monitors the two 'safety' probes designed to monitor the presence of liquid in the external tanks.

The monitoring of the condition of the safety probes (covered/uncovered) **is only active during the bowl loading phase.** It follows, then, that a lack of liquid in the tanks during the non-loading phases will not be signalled.

If: SSIC1 "KO" when EVCAR 1 = OFF - ➲ no signal

SSIC2 "KO" when EVCAR 2 = OFF - ➲ no signal

Example of how the safety system works:

Supposing the safety probe SSIC 1 is uncovered and the solenoid valve EVCAR 1 is de-energized. In this case there will be no signal.

Then the level probe SLIV 1 located in the bowl 1 is uncovered. The solenoid valve EVCAR 1 is enabled to allow the bowl 1 to fill up correctly.

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3 seconds (software hysteresis) after the activation of the solenoid valve EVCAR 1, the safety signal is activated as the probe SSIC 1 has been identified as uncovered. The loading solenoid valve EVCAR 1 is therefore deactivated and the buzzer emits an intermittent signal lasting 6 seconds.

NOTE 1: the same intervention methods are applied when the safety probe

is uncovered after the solenoid valve EVCAR 1 has been activated.

NOTE 2: the 3-second software filter activated when it detects the safety probe is uncovered and the relevant signal have been introduced to prevent the probe recognizing the "tank-bowl" conduit as "empty" when there is residual gas in it.

Summing Up:

- When one of the two safety probes SSICx fails to detect the passage (presence) of liquid during the loading phase, the system **will stop** (3-second software filter) **the loading phase in progress**, while the buzzer on the machine emits an intermittent warning signal lasting 6 seconds.
- If the safety probes SSICx is uncovered **when there is no loading phase in progress** (therefore EVCARx is de-energized), no alarm signal is emitted.

This signal is activated as soon as the system starts to load the bowl.

If: EVCAR1 = ON and SSIC1 = OK ➲ bowl 1 is filled as usual

EVCAR2 = ON and SSIC2 = OK ➲ bowl 2 is filled as usual

If: EVCAR1 = ON and SSIC1 = KO ➲ after 3 seconds - EVCAR 1 = OFF and buzzer is activated

EVCAR2 = ON and SSIC2 = KO ➲ after 3 seconds - EVCAR 2 = OFF and buzzer is activated

ATTENTION: After the no liquid alarm signal has been activated (SSICx uncovered), the actuators for the bowl whose safety probe is uncovered cannot be re-activated. Full functioning conditions can only be restored by switching the machine OFF then ON again and re-starting from the 1st filling phase. When the second safety probe is also identified as uncovered, all the charges relating to the system are inhibited (with the exception of EVPRESS) and the buzzer emits an intermittent sound for approximately 20 seconds. Full functioning conditions can only be restored by switching ON and OFF the machine starting from the 1st filling phase.

The EVPRESS solenoid valve is independent of the alarm signal and continues its CO_2 gas pressure reading function only (see relevant paragraph).

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WIRING DIAGRAM

VFCB (PRE-MIX) 115V/60Hz

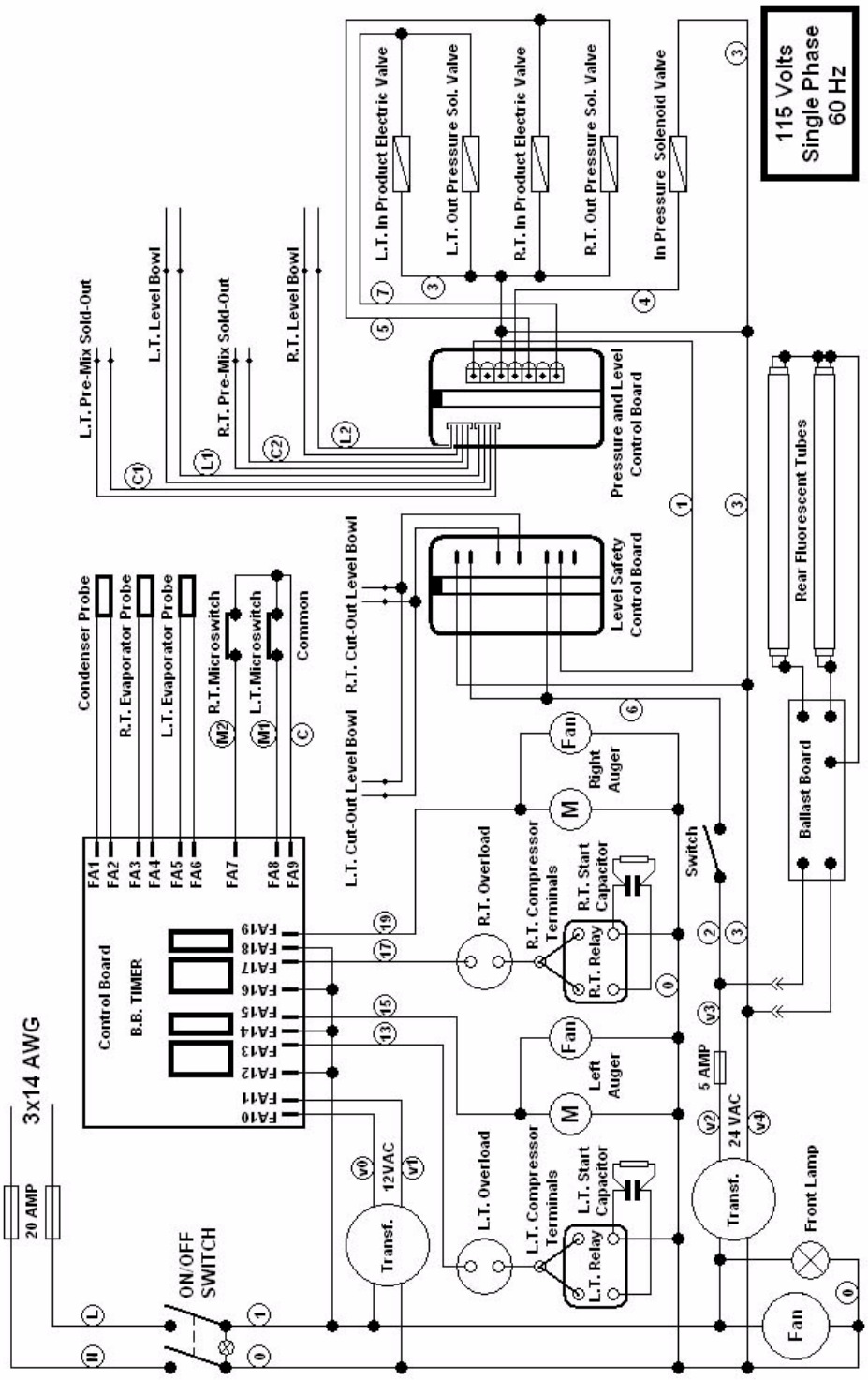

FIGURE 36

VFCB (POST-MIX) 115V/60Hz

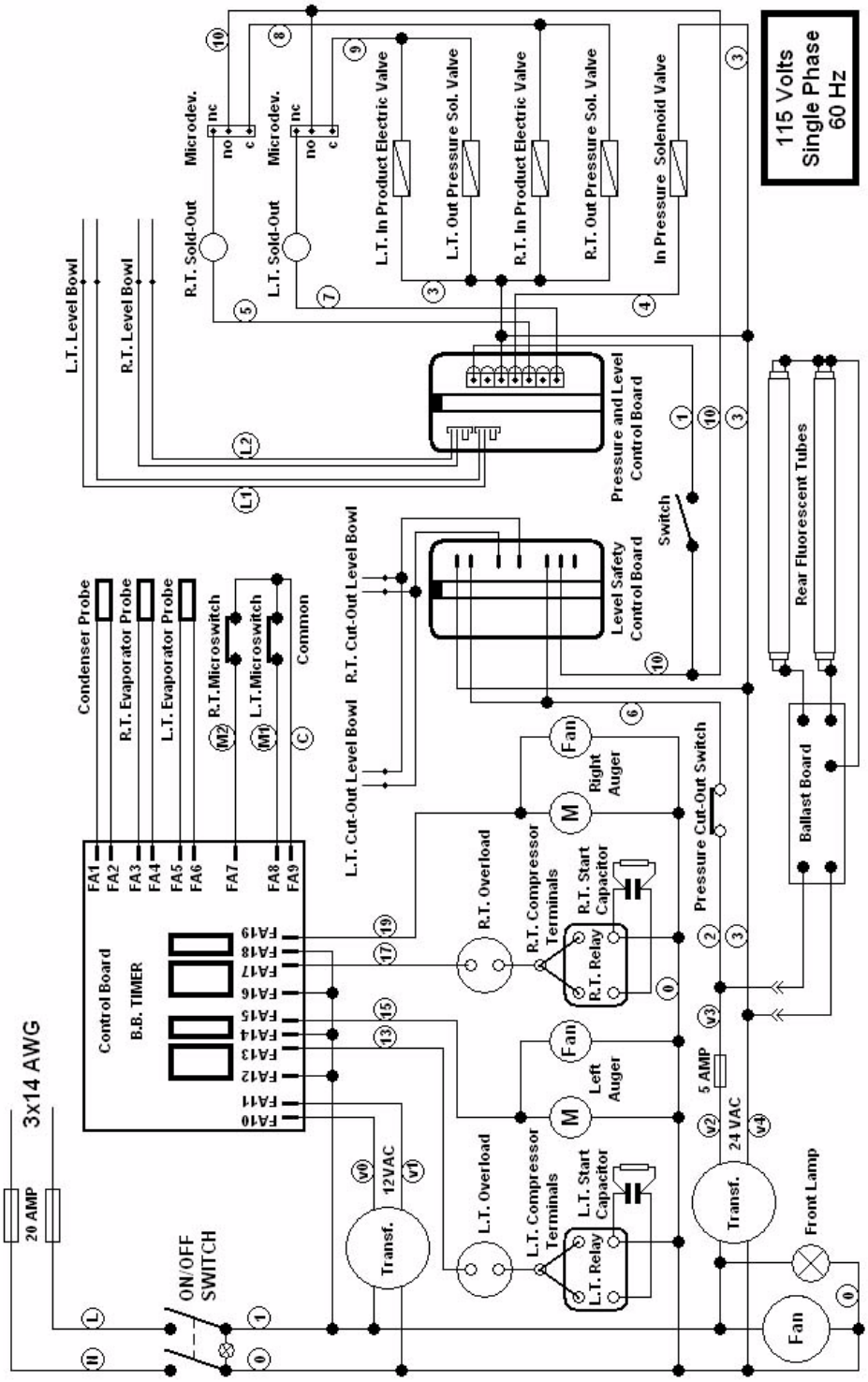

FIGURE 37

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VFCB (PRE-MIX) 230V/50Hz

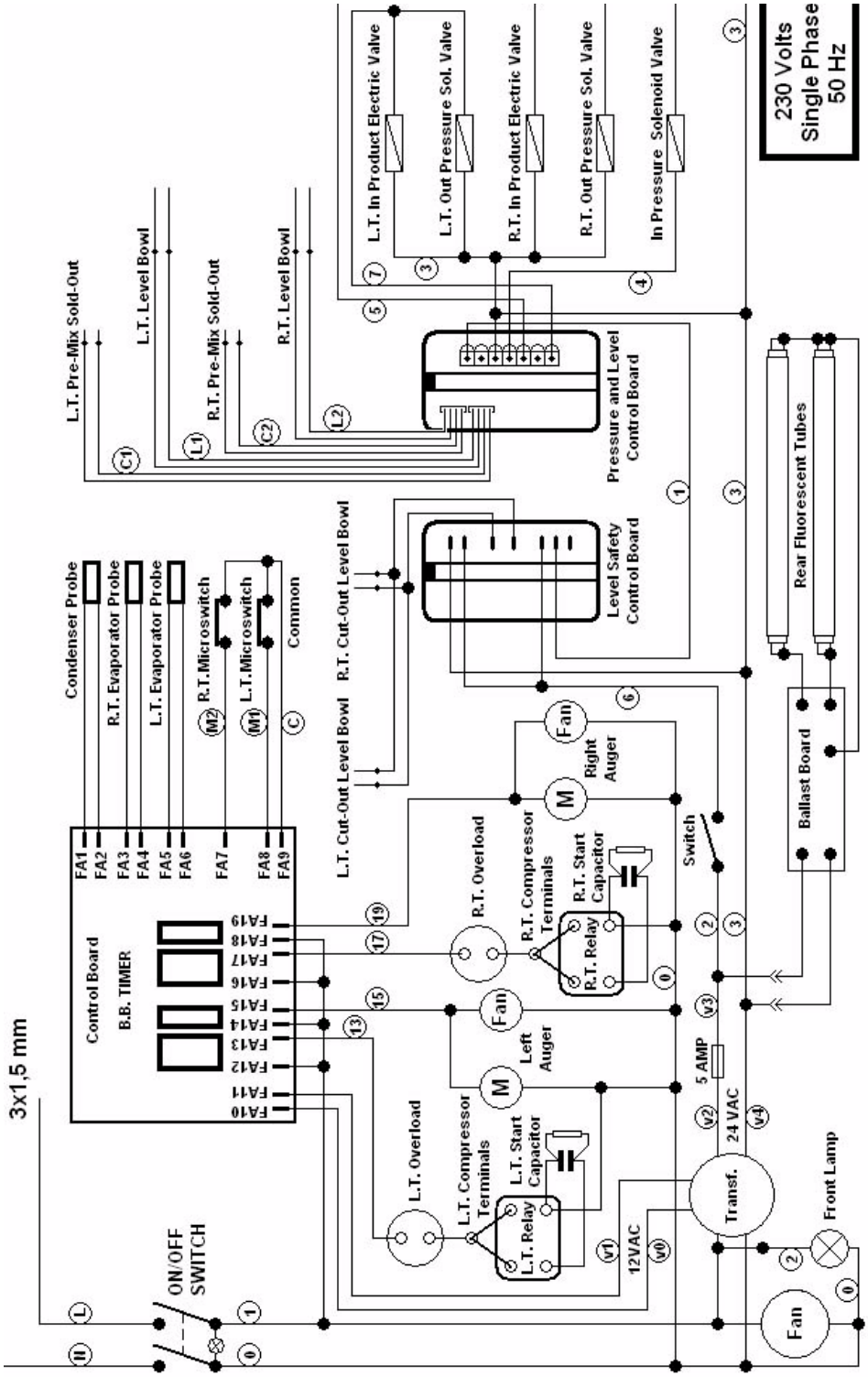

FIGURE 38

VFCB (POST-MIX) 230V/50Hz

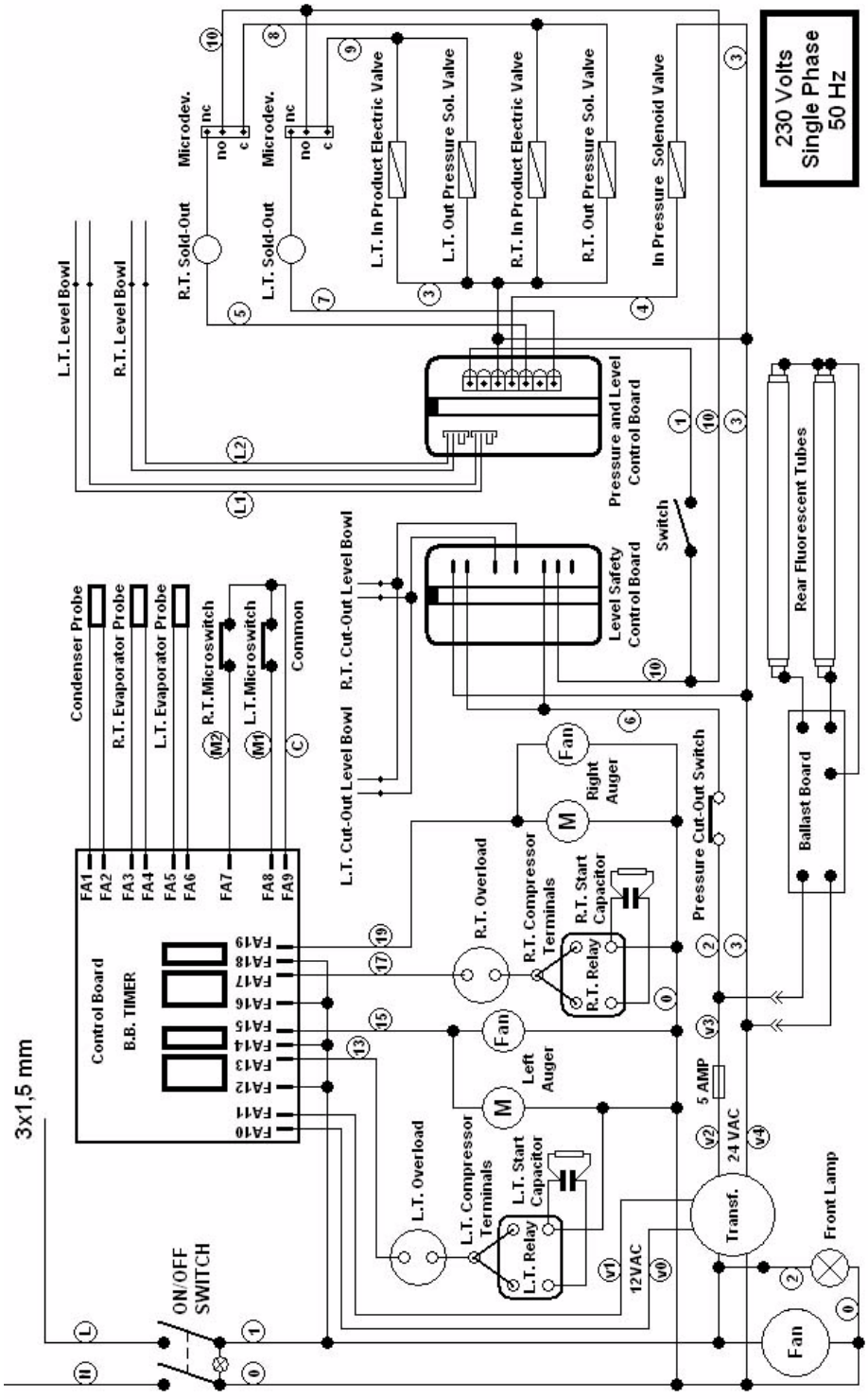

FIGURE 39

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TROUBLESHOOTING

NOTE: The following procedures must be performed by a qualified service technician.

Problem	Possible Cause	Solution
"Filt" or "Err" message appears on the touchpad LED readout	• The filter is dirty and needs to be cleaned	• Clean and replace filter following instructions (Removing and Cleaning Filter)
	• The unit is positioned too close to a wall or other object restricting air flow and causing the machine to run at a higher temperature	• Reposition unit to maximize ventilation space (see installation figures)
	• The filter is not properly installed	• Properly install filter see "Removing and cleaning filter"
	• The unit has been installed near a heat source, such as a coffee machine, ice maker or cold beverage machine which expels hot air from its vents, causing the machine to run at a high temperature. (Installation near a heat source should be avoid)	• Reposition unit to maximize ventilation space (see installation figures)
The machine does not cool, or cools only partially, but the compressors are running	• The space around the machine is inadequate for ventilation	• Allow at least 8" (20cm) between the machine and anything next to it; keep away from heat sources
	• Freezer is in COLD mode	• Return to FROZEN mode
	• The condenser fins are clogged with airborne particles	• Remove the side panels. Using a brush or compressed air clean the condenser
	• Fan motor is not running	• Check the fan motor's electrical connections and, if disconnected, reconnect. If still not operating, replace the motor
	• Refrigerant is low	• Locate the leak, eliminate it and recharge the system
The machine does not cool or cools only partially, but one or more of the compressors are not running	• Defective Electrical components	• Replace the malfunctioning components
	• Loose wire connections	• Check the contacts and correct those that are incomplete
	• One or more of the compressors are malfunctioning	• Replace the compressor(s)
	• No current is coming to the "compressor delay" PC board	• Check the electrical connections to the PC board as well as the transformer feeding the PC board and correct

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Problem	Possible Cause	Solution
The machine over-freezes making the auger movement slow or stopped	• The product Brix/ratio is too low	• Check the product Brix/ratio and correct
	• The screw setting for the product consistency control system is set too far toward the "+" position	• Reset the screw toward the "-" position to produce a thinner consistency product
	• The limit switch arm is bent away from the gearmotor and prevents contact	• Using pliers, straighten the limit switch arm
	• The level of the product in the bowl is too low, exposing the auger	• Add more product or turn the refrigeration "Off"
	• The compressor PC board contacts don't open	• Replace the PC board
The machine is noisy	• The fan motor blades are hitting internal components	• Check and correct
The main power switch is "On". The unit is not running.	• The fuse(s) are blown	• Replace the fuse(s)
	• The pressure cutout switch has activated	• Clean the condenser or add ventilation space around the machine (the cutout switch reset is automatic when the conditions are corrected)
	• Some electrical connections are not complete	• Check the contacts and correct those that are incomplete
	• The main power is not functioning	• Replace the switch
Product is leaking out of the bowl	• One of the bowl seals is not in place	• Replace or reposition the seals
Product is leaking from the dispensing valve	• The dispensing valve has been incompletely or incorrectly replaced in its position	• Reassemble and replace
	• The free movement of the dispensing valve is impeded	• Clean and lubricate the valve and valve cylinder with the lubricant provided with the machine
	• Dispensing valve o-rings are damaged	• Replace the o-rings
Product is flowing into drain tray through drainage tube	• The bell shaped "shaft" seal between the front of the cylinder and the auger hub has not been reinstalled properly	• Find the seal and put it back in place
	• The bell shaped "shaft" seal or the spindle bushing seal is damaged or worn	• Replace the damaged/worn seal and check the condition of the driveshaft.
The auger is not turning	• Auger not turned on	• Turn auger on
	• Some electrical connections are not complete	• Check the contacts and correct the ones that are incomplete
	• The gear motor(s) are malfunctioning	• Replace the gear motor(s)
The auger is creating noises as it rotates	• The large red bowl seal is not in position, causing the gear teeth not to mesh	• Check and correct
	• The product brix is incorrect	• Check the product brix and correct
	• The bell shaped "shaft" seal has been replaced without lubrication or is damaged	• Replace or Clean and lubricate with the lubricant provided with the machine
	• The auger has been incompletely or incorrectly reassembled (ie the auger's gear pins are not properly seated)	• Check and correct

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Problem	Possible Cause	Solution
Cap is leaking	• The nut is loose	• Tighten the nut
Bowl not refilling	• Out of syrup	• Replace
	• Out of CO_2	• Replace
	• Valves are shut off or blocked	• Open
	• Foam covering probes	• Wait
	• Fill Switch in off position	• Turn on
	• Defective syrup pressure switch	• Replace
	• Defective CO_2 shut off	• Replace
Bowl is overfilling	• Bad Pressure and Levels Card	• Replace the card
CO_2 leaking from back of unit	• Proper function of bowl over pressure discharge solenoids	• If not continuous leak it is normal operation
	• Poor connection	• Repair leak

WARRNING: Relief valve venting is normal, a continuous leak is not and must be corrected immediately. Repair the solenoid valve.

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